SERVICE-MANUAL

SINGLE

INDUCTION COOKERS

Type SH/BA 3500
Type SH/BA 5000

Type SH/IN 3500
Type SH/IN 5000

Type SH/WO 3500
Type SH/WO 5000

Type SH/WO/IN 3500
Type SH/WO/IN 5000

CONTENT PAGE

1	**Safety**	**3**
1.1	Description of danger signs	3
1.2	Qualification and training of personnel	3
1.3	Safety prescriptions for installation and service	3
1.4	Unauthorized reconstruction and use of spare parts	4
1.5	Improper operating methods	4
2	**Technical Information**	**5**
3	**Functioning**	**6**
3.1	Adjusting the performance rate	6
3.2	Checking the temperature	6
3.3	Protection overload current	6
4	**Surroundings of installation**	**7**
4.1	Pan material for induction cookers	7
5	**Tests**	**8**
5.1	Pan detection	8
5.2	Power rating	8
5.3	Maximum rating	9
5.4	Current	9
5.5	Fan	10
5.6	Test components	10
5.6.1	Power board	10
5.6.2	Rectifier	11
5.6.3	Transistor module	11
6	**Maintenance / Service**	**12**
7	**Fault finding**	**12**
7.1	Generally	12
7.2	Error messages	13
7.3	Flux plot	14/15/16/17
7.4	Fault finding / Troubleshooting guide	18
7.5	Fault repair	20
8	**Exchange of spare parts**	**21**
8.1	To open the cooker	22
8.2	Power print C016, C031	22/23
8.3	Logic print C018	22
8.4	Transistor module	23
8.5	Rectifier	23
8.6	Fan	24
8.7	Temperature sensor heat sink	24
8.8	Temperature sensor coil	24
8.9	Repair of spare parts	24
9	**Appendix**	**25**
9.1	Logic print C018	25
9.2	Power print C031	26
9.3	Power print C016	27
9.4	Signal connector ST1	28

1 Safety

1.1 Description of danger signs

	The safety information which may cause danger for people (personal injury) at non-observance is specially marked with the general danger symbol
	The electrical connection must be made by an expert.
CAUTION	Is used if there is a hazard or unsafe practice which could result in minor personal injury or property damage

1.2 Qualification and training of personnel

The staff for assembly, installation, commissioning, operation and maintenance must have the appropriate qualifications. The field of responsibility, competence and supervision of the staff must be defined and controlled.

1.3 Safety prescriptions for installation and service

The operating personnel has to make sure that the installation and service as well as all inspection is done by authorized and qualified personnel. This personnel must have read very carefully the „Instructions for use“ in order to meet the requirements. For installation, service, maintenance, repair and overhaul of the induction cookers, the personnel has to be specially qualified and must have attended a special training, authorized by the manufacturer.

In principle, such work on induction appliances must only be carried out when it has no electrical tension. The cookers must be switched off and disconnected from the electric connection. The installation of safety and protection have to be re-installed after finishing of the work.

1.4 Unauthorized reconstruction and use of spare parts

Reconstruction of the cooker or changes to the cooker are not allowed. Contact the manufacturer if you intend to make any changes on the cooker. To guarantee safety, just use genuine spare parts and accessories authorized by the manufacturer. The use of other components cancels any liability for the resultant consequences.

1.5 Improper operating methods

The operating reliability of the cookers can only be guaranteed with appropriate application of the cooker. The limit values may be exceeded on no account.

2 Technical Information

Base-Line

Type 3500 SH/BA, SH/IN	**208 V / 1 ph**	**230 V / 1 ph**	**240 V / 1 ph**
Wattage kW	3.5	3.5	3.5
Current A	17	16	15
Power factor Cos	> 0.95 > 0.95	> 0.95 > 0.95	> 0.95 > 0.95
Discharge rate mA	4	4	4
∅ coil mm	195	210	210

Type 5000 SH/BA, SH/IN	**208V/ 3 ph**	**400 V / 3 ph**	**440 V / 3 ph**
Wattage kW	5.0	5.0	5.0
Current A	14	8	7
Power factor Cos	> 0.95 > 0.95	> 0.90 > 0.95	> 0.90 > 0.95
Discharge rate mA	4	4	4
∅ coil mm	210	210	220

Wok-Line

Type 3500 SH/WO, SH/WO/IN	**208 V / 1 ph**	**230 V / 1 ph**	**240 V / 1 ph**
Wattage kW	3.5	3.5	3.5
Current A	17	16	15
Power factor Cos	> 0.95 > 0.95	> 0.95 > 0.95	> 0.95 > 0.95
Discharge rate mA	4	4	4
∅ Ceramic bowl mm	260	260	260
∅ coil mm	240	240	240

Type 5000 SH/WO, SH/WO/IN	**208 V / 3 ph**	**400 V / 3 ph**	**440 V / 3 ph**
Wattage kW	5.0	5.0	5.0
Current A	14	8	7
Power factor Cos	> 0.95 > 0.95	> 0.90 > 0.95	> 0.90 > 0.95
Discharge rate mA	4	4	4
∅ Ceramic bowl mm	260	260	260
∅ coil mm	240	240	270

Max. tolerance of power supply	Nominal voltage +6 / -10%
Frequency	50/60 Hz
Protection class	IP X0
Min. diameter of pans	Ca. 12 cm
Max. ambient temperature: stockage	-20 to 70°C/ 0 to + 160° F
Max. ambient temperature: function	-5 to 40°C/ -40 to 110 ° F
Max. relative humidity of air: stockage	10 to 90%
Max. relative humidity of air: function	30 to 90%

On the power board, a main filter for the interference suppression is integrated

Certifications
Satisfies the latest specifications: VDE EN 60335-1/-2/36, UL 197; CAN/CSA/C 22.2 No. 109, SSF 4-1996, CE-compliant.

Constructions
The cookers are made of stainless steel (CNS 1.4301). The case is sealed. The mounting of the vitrocerame as well as of the ceramic bowl is done with screws.

3 Functioning

3.1 Adjusting the performance rate

The performance rate is adjusted by the potentiometer (control knob). The inductive performance is depending on the position of the potentiometer: Position 1 = minimum power, Position 10 = maximum power.

3.2 Checking the temperature

Induction coil
The temperature of the induction coil is checked by a temperature sensor. If the coil is heated over the maximum power, the heating process is stopped. As soon as the coil has cooled down, the Induction unit may be re-started. Turn the position of the kontrol knob on „0“ and then on the desired power.

Power board
The temperature of the power board is checked by a temperature sensor. As soon as the heat sink is heated over 55ºC/130ºF, a cooling fan is started. Temperatures of the heat sinks of more than 70ºC/ 160ºF will reduce automatically the checking of the power in order to keep the induction cooker working under normal conditions.

Print
The temperature of the print is checking the ambient temperature of the appliance. As soon as the temperature is higher than the programmed value the heating process is stopped. It can be re-started as soon as normal conditions are reached.

3.3 Protection overload current

Detecting inapproriate pan material or magnetic objects on the heating area, the current in the induction coil may be essentially raised. In order to protect the power board,
the current in the coil is checked. As soon as the current in the coil exceeds the tolerance, the generator is blocked and there is no further aktive exchange of energy. He will be re-started as soon as normal working conditions are reached.

4 Surroundings of installation

The electrical connection must be made by an expert.

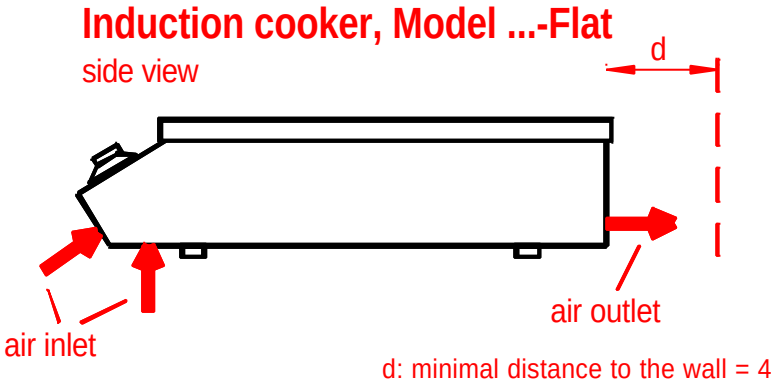
Please follow the following rules:

- Verify and make sure that the electric potential of the main conductor corresponds with the specification plate.
- The electrical connections must satisfy local house installation regulations. The valid, national and local regulations of the electricity-supply inspection authorities must be observed.
- The induction cooker is equipped with a flexible cable which must be connected to a wall socket.
- When faulty-current circuit breakers are used, they must be rated for a breaking current of 30mA or more.

The cooker has to be set up on a even place like a table and requires an area of at least 400 x 480 mm. The air inlet and air outlet may not be obstructed, the place must be able to withstand a loading of 40 kg. The cooker doesn't have to be fixed on the table. The control knob to operate the cooker must be easily accessible.

To guarantee proper operation of the cooker, the ambient temperature must be within the range of -5º to 40ºC / -40º to 110º and humidity of air between 30% to 90 %

The cooker may not be exposed to jet of water.



4.1 Pan material for induction cookers

Cooking with induction ➠ it is very important to use appropriate pan material. The bottom of the pan is the element that closes the magnetic field generated by the induction coil. Use only appropriate pan material.

In order to check whether your pan is appropriate, use a magnet. This has to stick at the bottom of the pan. If not, your pan is not suitable for induction cookers. Choose a pan suitable for induction.

5 Tests

5.1 Pan detection (Base-Line only)

> **ATTENTION** The heating area is warmed by the hot pan. In order to avoid injuries (burnings), do not touch the heating area.

This test shows whether the induction cooker is working well when pans with a little diameter are used and if little metallic objects are heated on the heating area. To do this test, you need the following material:

- An appropriate pan with a bottom diameter of 12 cm

or two untreated round metallic plates, approximately 4mm thick:

- metallic plate 1 diameter d = 12 cm
- metallic plate 2 diameter d = 7 cm

Test with pans

Step	Action	Level	Result
1	Put the pan in the middle of the heating area	1 12	Heat, the indicator lights
2	Push the pan until the edge of the pan is in the middle of the heating area	1 12	No heating, the indicator doesn't light

Test with metallic plates

Step	Action	Level	Result
1	Put the metallic plate in the middle of the heating area	1 12	Heat, the indicator lights
2	Push the metallic plate until the edge of the plate is in the middle of the heating area	1 12	No heating, the indicator doesn't light

5.2 Power rating

> **ATTENTION** The heating area is warmed by the hot pan. In order to avoid injuries (burnings), do not touch the heating area.

This test shows whether the rating may be set by the potentiometer. You need an appropriate pan (or a Wok-pan for Wok types) with a bottom diameter of >12cm.

Step	Action	Level	Result
1	Put the pan on the heating area until water is boiling	12	Heat, water is boiling
2	Reduce the power by turning slowly the control knob	12 1	Heat rating reduces (water does not boil anymore), phase current reduces continuosly

5.3 Maximum rating

ATTENTION The heating area is warmed by the hot pan. In order to avoid injuries (burning), do not touch the heating area.

For this test you need a pan with a bottom diameter of 28 cm or more, resp. a Wok pan for the Wok types.

Test cooking time

Step	Action	Level	Result
1	Put a pan on the heating area and fill it up with some litres of water (~ 20º)	12	heat
2	Measure the time until water is cooking (Type Base-Line) Measure the time until water is cooking (Type Wok-Line)	12	The measured time should be: 140 Sec./litre (3.5kW) 70 Sec./litre (5.0kW) 90 Sec /litre (3.5kW) 60 Sec./litre (5.0kW)

5.4 Current

Step	Action	Level	Result
1	Put a pan on the heating area and fill it up with some litres of water (~ 20º)	12	heat
2	Measure phase current	12	Standard value: 1 x 208 VAC - 3.5 kW 17A 1 x 220/230 VAC - 3.5 kW 16 A 3 x 208 VAC -3.5 kW 10 A -5.0 kW 14 A 3 x 380/400 VAC - 5 kW 8 A

5.5 Fan

ATTENTION The heating area is warmed by the hot pan. In order to avoid injuries (burnings), do not touch the heating area.

With this test, fan, fan observer as well as the degree of soiling are verified. At the beginning of the test, the induction cooker should be cold. You need a pan with a bottom diameter of >28cm or a Wok pan.

Step	Action	Level	Result
1	Put a pan on the heating area and fill it up with some litres of water	12	heat
2	Measure the time until the fan starts working	12	The fan should start working after 6-8 minutes
3	Go on cooking for about 30 minutes	12	The heating process may not be interrupted (indicator lamp) The fan may repeatedly start and stop.
4	Stop the induction cooker	0	The fan stops immediately

5.6 Test components

CAUTION The mains cable must be switched off.

5.6.1 Power board

The function of the transistor modul and of the rectifier are verified.

Rectifier (picture 1)
Conducting-state voltage Diode U+ = 0,5V: if all conducting-state voltages show approx. 0.5 V, the rectifier is working.
A short circuit between ‚+' and ‚-, means that the transistor module is defective.

Transistor module (picture 2)
Conducting-state voltage Diode U+ = 0.4 V: if all conducting-state voltages show approx.0.4 V, the transistor module is working. A short circuit between C2-E2, C1-E1 and C1-2 means that the transistor module is defective.
If the rectifer and/or the transistor module seem to be defective, separate the power board C016/C031 from heat sink and verify the rectifier and the transistor module without connection.

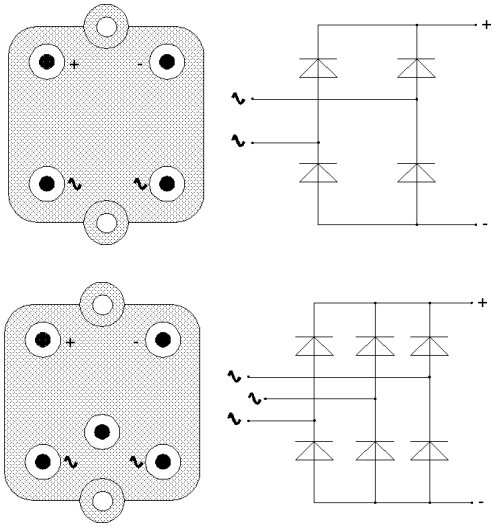
5.6.2. Rectifier

The recitifier is separated from the power board but still fixed on the heat sink. Dismount according to „Replacement of power board“.

- Conducting-state voltage Diode U+ = approx. 0.5 V: if all conducting-state voltages show approx. 0.5 V, the rectifier works.
- Short circuit at the different diodes: rectifier is defective.

Picture 1

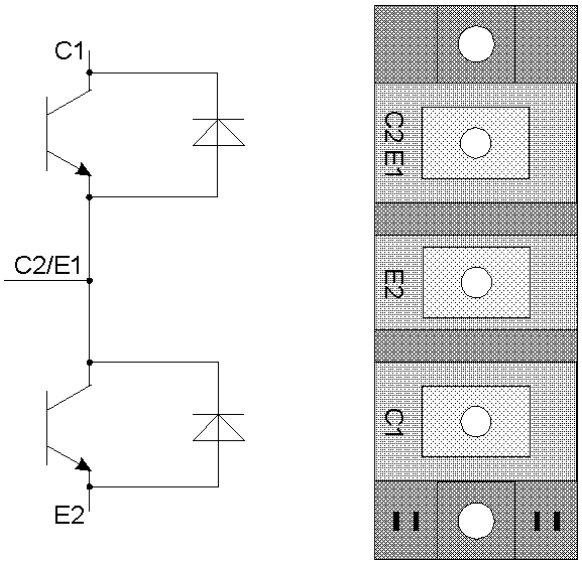
3.1



5.6.3 Transistor module

The transistor module is separated from the power board but still fixed on the heat sink. Dismount according to „Replacement of power board“.
Conducting-state voltage Diode U+ = approx. 0.4 V: if all conducting-state voltages show approx. 0.4V, the transistor module is working.
A short circuit between AC2-E2, C1-E1 and C1-E2 means that the transistor module is defective. If the module is defective, verify diodes D7, D8, D9 and D10 on short circuit (see 9.2/9.3). Replace the power board when you discover a short circuit.

Picture 2



6 Maintenance / Service

Maintenance work may only be effected by authorized personnel. Before starting the maintenance works, the energy supply must be stopped and the appliance must have cooled down. The following maintenance works must be effected periodically. The longer and the more frequently the cooker is used, the more often the maintenance works have to be effected. Every cooker must be checked at least once a year.

Fan

The good function of the cooker can only be guaranteed if the electronic is kept by normal working temperatures.

- The air inlet and air outlet slots must not be hindered
- The airducts must be free of dirt
- The air must circulate unhinderedly through the heat sink (no hindrance)
- The fan is well fixed
- The heat sinks are well fixed

Induction coil

Check:

- Mechanical fixing (screws tightened)?
- Coil adhesive (fixing o.k.)?
- Ferrite (fixing o.k.)?

Generally

Check

- Protection connection to earth?
- Screwed connections
- Isolations of cables
- Any kind of liquids that have entered the cooker
- Dirt in the cooker

7 Fault finding

7.1 Generally

ATTENTION	Do not open the cooker as long as it is connected with current. Dangerous tension!

The induction cooker may only be opened by authorized personnel. Stop any work if the heating area(vitrocerame) is broken. The induction cooker must be switched off and the mains cable must be disconnected. Do not touch any parts inside the cooker.
Before replacing a part check the wiring. Make especially attention to the following faults:

- Broken cables
- Squeezed cables
- Defective isolations of cables
- Bad soldering joints

You must not effect any repair on the printed boards. It is important to do respective maintenance works after every repair (see „Maintenance“, and „Service“)

7.2 Error messages

LED8	LED7	LED6	LED5	Code	Signification	
--	--	--	--	--	No mistake, normal function	
--	--	--	on	1	No coil current, Hardware overcurrent	
--	--	on	--	2	High coil current, Software overcurrent	
--	--	on	on	3	Temperature heat sink	
--	on	--	--	4	Temperature heating area	1)
--	on	--	on	5	Potentiometer line break	
--	on	on	--	6	Temperature inside	
--	on	on	on	7	Heating area coil sensor	2)
on	on	--	--	12	Power reduction heat sink temperature	3)
on	on	--	on	13	Power reduction coil temperature	3)

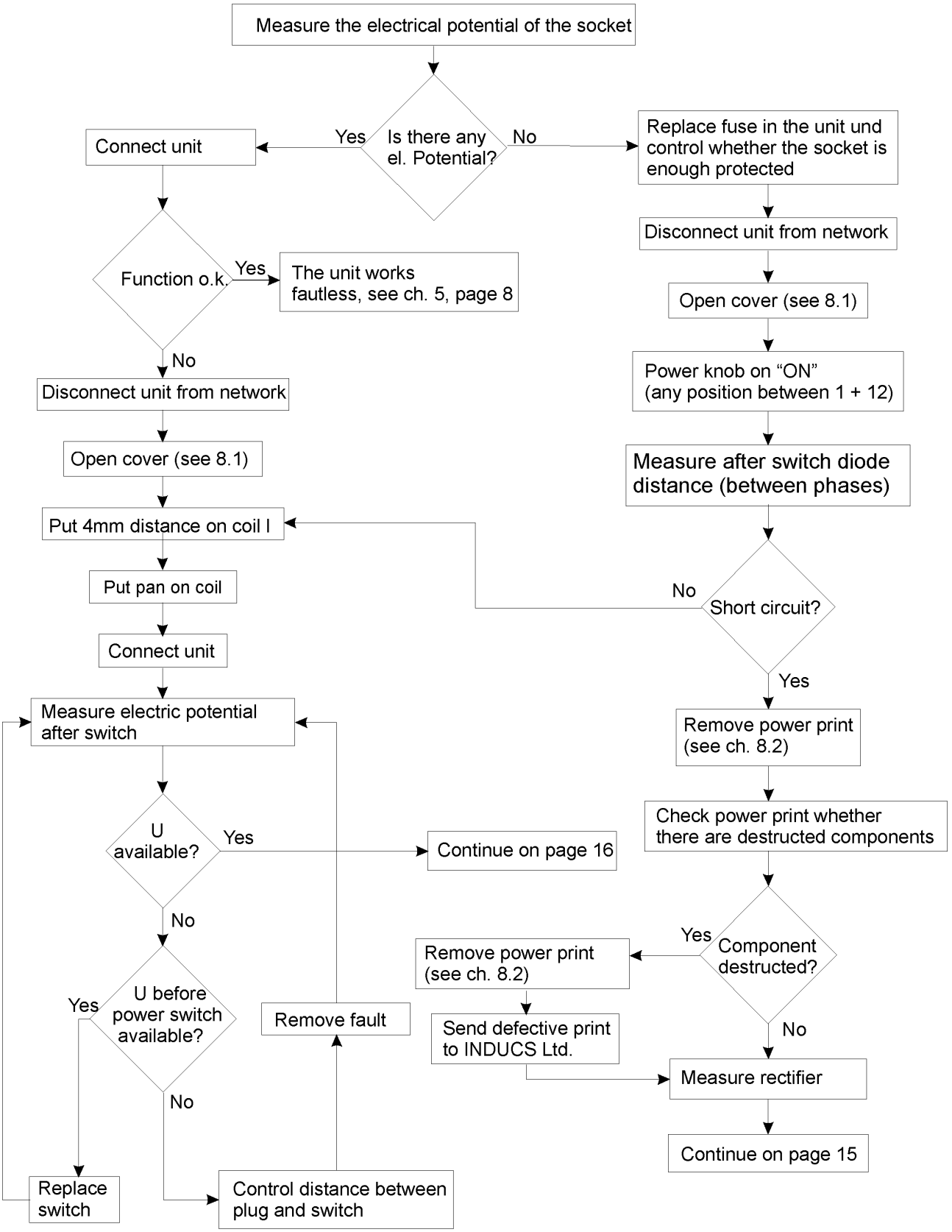
1) The induction unit can only be startet again if the fault has been given receipt for (turn power rotary knob „off“)

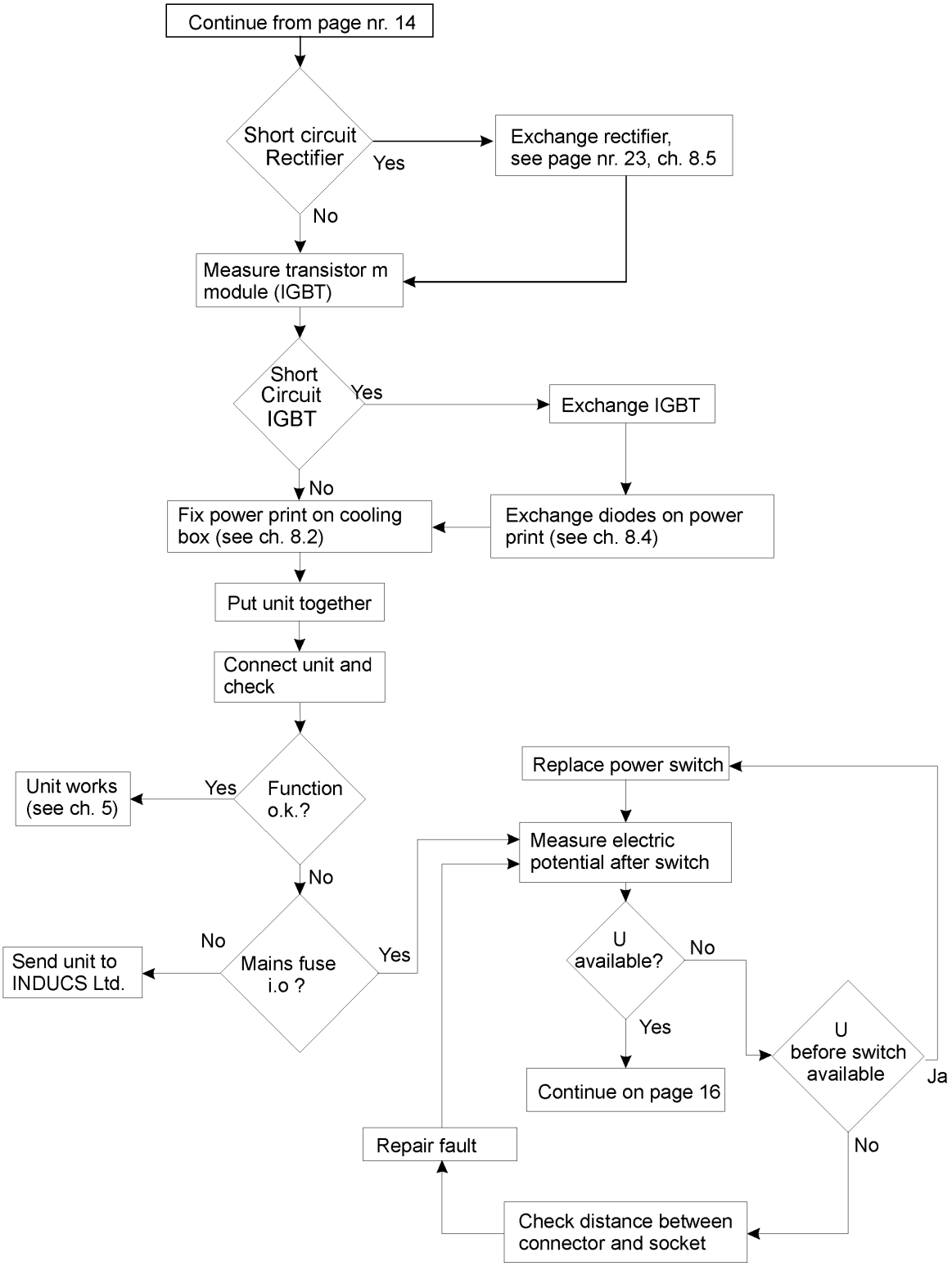
2) The induction unit continues working but the temperature of the cooking platform is not controlled anymore.

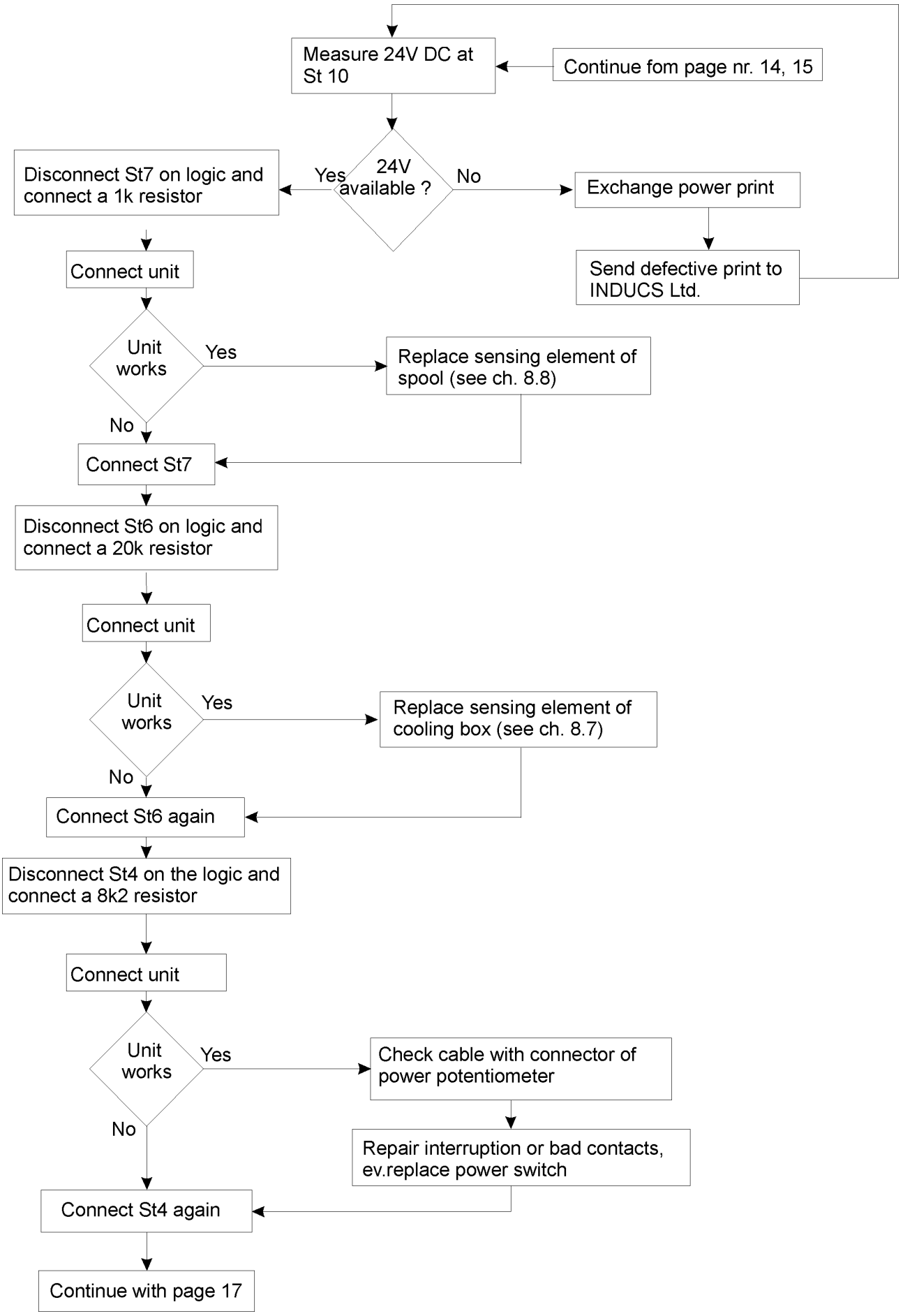
3) The induction unit continues working with reduced power cycles.

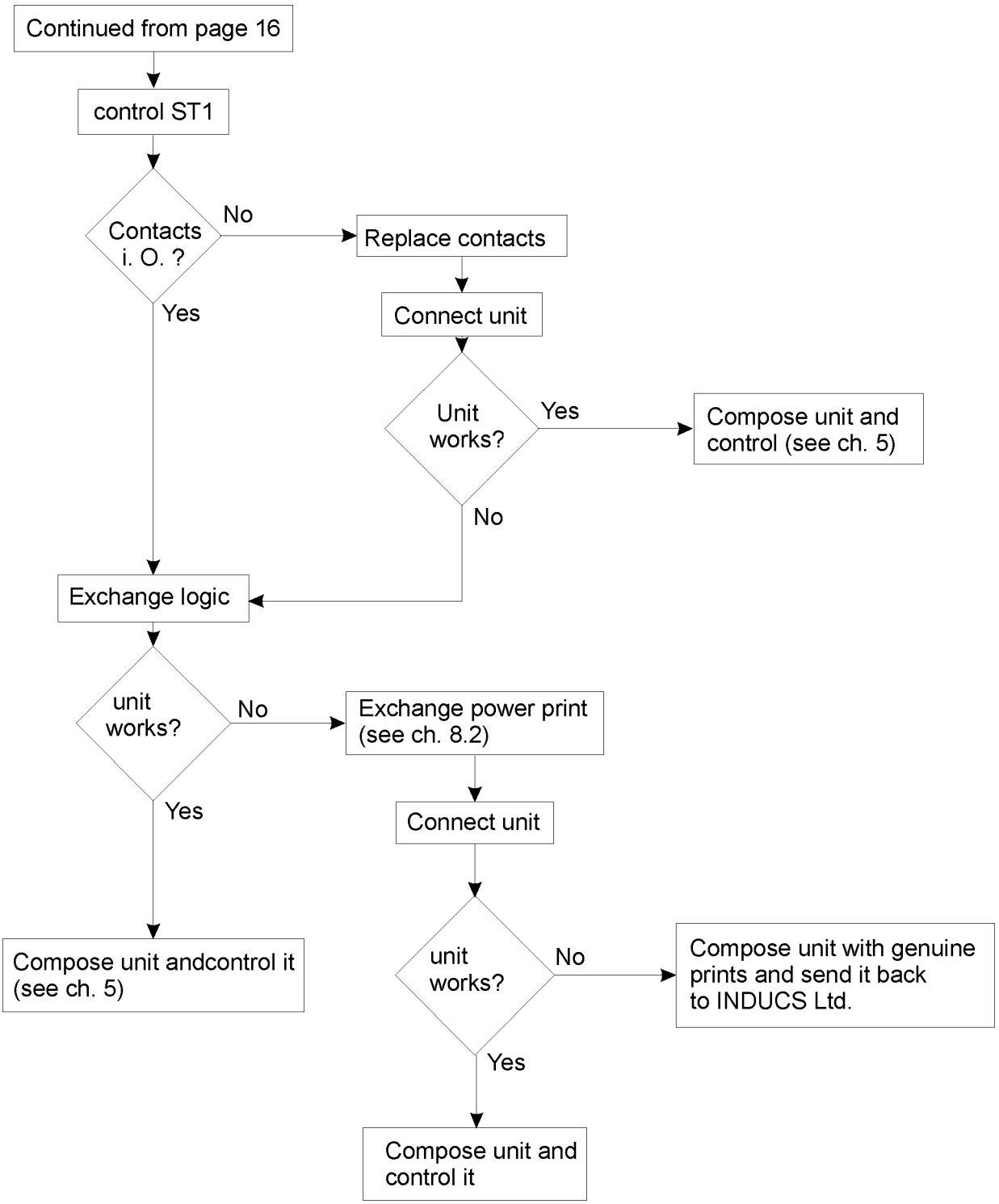
„Code“ informs about the number of flashes of the indicator lamp.
Order of error message: The indicator lamp flashes for an interval of 0,6 sec. The number of the following short flashes has to be counted and informs about the kind of error corresponding to the above mentioned code system

7.3 Flux plot to fault finding




Continue from page nr. 14
Short circuit Rectifier
Yes
Exchange rectifier, see page nr. 23, ch. 8.5
No
Measure transistor m module (IGBT)
Short Circuit IGBT
Yes
Exchange IGBT
No
Fix power print on cooling box (see ch. 8.2)
Exchange diodes on power print (see ch. 8.4)
Put unit together
Connect unit and check
Function o.k.?
Yes
Unit works (see ch. 5)
No
Mains fuse i.o ?
No
Send unit to INDUCS Ltd.
Yes
Replace power switch
Measure electric potential after switch
U available?
No
Yes
Continue on page 16
U before switch available
Ja
No
Repair fault
Check distance between connector and socket


Measure 24V DC at St 10
Continue fom page nr. 14, 15
24V available ?
Yes
No
Disconnect St7 on logic and connect a 1k resistor
Exchange power print
Send defective print to INDUCS Ltd.
Connect unit
Unit works
Yes
Replace sensing element of spool (see ch. 8.8)
No
Connect St7
Disconnect St6 on logic and connect a 20k resistor
Connect unit
Unit works
Yes
Replace sensing element of cooling box (see ch. 8.7)
No
Connect St6 again
Disconnect St4 on the logic and connect a 8k2 resistor
Connect unit
Unit works
Yes
Check cable with connector of power potentiometer
Repair interruption or bad contacts, ev.replace power switch
No
Connect St4 again
Continue with page 17


Continued from page 16
control ST1
Contacts i. O. ?
No
Yes
Replace contacts
Connect unit
Unit works?
Yes
Compose unit and control (see ch. 5)
No
Exchange logic
unit works?
No
Exchange power print (see ch. 8.2)
Yes
Connect unit
Compose unit andcontrol it (see ch. 5)
unit works?
No
Compose unit with genuine prints and send it back to INDUCS Ltd.
Yes
Compose unit and control it

7.4 Fault finding / Troubleshooting guide

Fault	Possible cause	Action to take through authorized personnel	Nr.
Fuse burns out at starting	Cooker is wrong connected	Check the connections	
	Short circuit at power print	Check the power print	AP1
	Short circuit wiring	Check the wiring	
No heating (indicator lamp does not flash)	Potentiometer on „**OFF**“position	Turn the potentiometer on „ON“ (interrupter „ON“)	
	Main switch defective	Check power on binder 5 and 6 (one phase) or 4,5, and 6 (three phase) on power board	
	No current supply	Check the fuses, Check connection	
	Power supply not satisfactory	Check power supply	
	Fuses „Logic supply“ on power print defective	Check and replace eventually fuses S1 and S2 (Typ 1AT)	
No heating	Pan too small (Diameter of pan bottom less than 12 cm)	Take appropriate pan	
	Pan is not placed in the middle of the heating area (pan can not be detected)	Push the pan in the middle of the heating area	
	Inappropriate pan	Choose a pan appropriate for induction 1)	
	Power print defective	Check power print	AP2
	Logic print defective	Check logic print	AL1
	Potentiometer defective	Check potentiometer	AO1
	Temperature sensor Coil defective	Check temperature coil sensor	AT1

Fault	Possible cause	Action to take through authorized personnel	Nr.
No heating with small pans	Pan detection wrong adjusted	Contact your supplier	AL2
Poor heating, indicator lamp is ON (flashes)	Used pan is not ideal	Chose a pan that is recommended for induction cooking. Compare results with your pan.	
	Potentiometer defective	Check potentiometer	AO2
	Air cooling system is obstructed	Make sure that the air supply und air exit are not obstructed	
Poor heating	Ambient temperature is too high (the air cooling system cannot hold the cooker in the normal operating temperature 2)	Make sure that no hot ambient air is sucked in by the fan. Reduce the temperature of the ambient air. The temperature of the air supply may not exceed 40°C/ 110º F.	
	One phase is missing (only with three phase supply)	Check the fuses	
	Power print defective	Check power print	AP3
	Logic print defective	Verify logicprint	AL3
No reaction on turning the control knob	Potentiometer is defective	Check potentiometer	AO3
Heat rating switches off and on within minutes, fan is working	Air cooling system is hindered	Make sure that air supply and air exit are not hindered, clean air slots	
	Fan is dirty	Clean fan	AF1
Heat rating switches on and off within minutes, fan does not work	Fan defective Fan checking defective	Check fan	AF2
Heat rating switches on and off within minutes (after a long and constant use)	Coil is overheated, heating area is too hot Empty pan Overheated oil in the pan	Switch off cooker, put pan away and wait until the heating area has cooled down.	

Fault	Possible cause	Action to take through authorized personnel	Nr.
Small metallic objects (for ex. spoons) are heated on the heating area	Pan detection is wrong adjusted	Check logic print and contact your supplier	AL4

1) In order to verify whether the pan is appropriate use a magnet which should stick at the bottom of the pan. If it does not, your pan is inappropriate to induction cookers. Choose pan material that is recommended for induction appliances.

2) The cooling system is starting to work when the temperature of the heat sink is higher than 55ºC/160ºF, it reduces the checking of the power in order to hold the power board in normal working conditions.

7.5 Fault repair

Detailled instruction of the steps in order to repair faults (see list“Faultfinding“)

Nr.	Action
AP1	Switch off the mains cable of the cooker. Check with ohmmeter whether a short circuit has occured. Make this test in „ON“ and „OFF“-position. Locate short circuit. If it happened to the power print, replace it.
AP2	Check load +24 VDC ST 1/1: „24 VDC, ST 1/4 ND (on power prints C016, C031 and on logic prints C018) If wrong, replace logic print.

The following measurements must be done with oscilloscope:

	Sign „enable“ (ST 1/2) and „low“ (ST 1/3)[a]. If wrong, replace logic print C018, Check components (see „Test components“)
AP3	Sign „low“ (ST 1/3) and high0“ (ST 1/5)[a] If wrong, replace logic print C018, otherwise check components on the power print (see „Test components“).
AL1	Verify signs „enable“ (ST 1/2) and „low“ (ST 1/3)[a] . If wrong, replace logic print C018.
AL2	Replace logic print
AL3	Check signs „low“ (ST 1/3) and „high0“ (ST 1/5)[a]. If wrong, replace logic print C018 otherwise replace power unit (s. AP3)
AL4	See AL2

Nr.	Action
AO1	Switch off mains cable. Take out ST4 from logicprint C018. Check resistor (ST 4/1 – ST 4/2) by means of ohmmeter: Position control knob R (kohm) 0 0 .....0.1 4 4.1 4.3 5 6.3 6.5 If wrong, adjust potentiometer or replace resistor incl. potentiometer
AO2	See AO1
AO3	See AO1
AT1	Switch off mains cable. Take out ST7 from logicprint C018. Check resistor (ST 7/1 – ST 7/2) by means of ohmmeter: FLAT WOK Temperature Vitrocerame R (Ohm) Temperature Induction coil R (Ohm) 25º C / 80ºF 980 .... 1000 25ºC / 80º F 50 - 100 100º C / 210ºF 1240 .... 1280 180ºC/355º F 3500 - 4500 150º C / 300ºF 1410 .... 1450 200ºC / 390ºF ....1570..... .1610 When out of the range, replace coil including temperature sensor
AF1	Switch off and dismount fan. Clean it.
AF2	Connect sign „Fan control“ (ST 1/10) with GND (ST 1/4) Fan must work. If not, fan is defective. Replace it. Otherwise logic print must be defective. Replace.

[a] see „sign connector ST1“

8 Exchange of spare parts

CAUTION	All spare parts and accessories may only be changed by authorized personnel

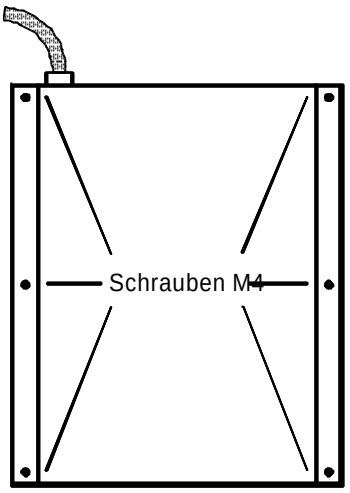
CAUTION	In order to guarantee safety use only genuine spare parts and accessories from INDUCS Ltd. If other components are used no liability is accepted.

CAUTION	The mains cable must be disconnected.

8.1 To open the induction unit

(1-Phase, 3-Phases)

- Turn the induction unit
- Remove screws
- Turn induction unit back in normal position
- Lift cover, turn away at the right side, put it at the side panel
- Remove coil carrier: remove 2 stop nuts at the left
- Remove M4 screws
- Remove screws A1 and A2
- Turn away coil carrier at the left



(Vorderseite)
Sicht von unten

8.2 Power print C016, C031

(1 Phase, 3 Phases)

Dismount of the power print:

- Draw out all connectors on the power print: ST1
- Draw out all clamped joints on the power print:
  1 Phase: L1, N, PE, 1,2,3,4,7,8,
  3 Phases: L1, L2, L3, PE, 1,2,3,4,5,6,7.8.
- Draw out ST5 on logic print C018
- Remove all soldered joints by means of solder plating
- Remove pin M4 and screw M4 in the corner of the print
- Remove the connection to the transistor module, 3 screws M5x12
- Remove the rectifier, 5 screws M4x16 (3 Phases) or 4 screws M4x16 (1 Phase)
  Make attention to the distance bolts and the plain washers: bolt head/spring washer/spring washer/ plain washer/ distance bolt (range the two spring washers together)
- Remove power print

Assembly of the power print

- Put the power print on the bolts. Make attention to the connectors J16, J17, J18, J19: The four wires of the transistor module must be conducted through the wholes of the print plate.

- Put the screws to fix the rectifier, 5 crews M4x16 (3 Phases) or 4 screws M4x16 (1 Phase) Make attention to the distance bolts und the plain washers: bolt head/spring washer/spring washer/ plain washer/distance bolts (range the two spring washers together)
- Put the screws to fix the transistor module. Do not yet tighten the screws.
- Fix the screws of the rectifier
- Fix the screws on the transistor module. Don't tighten too much.
- Fix the bolt M4 and the screws M4 in the corners of the print plate
- Solder the connectors J16, J17, J18, J19 with solder plating
- Connect the clamping joints on the power print:
  1 Phase: L1, N, PE, 1,2,4,5,7,8
  3 Phases: L1, L2, L3, PE, 1,2,3,4,5,6,7,8
- Connect all plug-type connectors on the power print: ST1
- Connect ST5 on the power print C018
- Connect the coil with A1 and A2 (screws)

8.3 Logic print C018

Dismount of logic print

- Disconnect all plug-type connectors: ST1, ST4, ST5, ST6, ST7, ST8
- Remove nut M3 and the 3 plastic bolts
- Remove the logic print

Assembly of the logic print

- Put the new logic print (Exchange print) into the case
- Fix the print with nut M3 and the 3 plastic bolts
- Connect all plug-type connectors on the logic print: ST1, ST4, ST5, ST6, ST7, ST8

8.4 Transistor module

First dismount power print C016, C031 (see 8.2)

- Remove the two hexagon socket screws
- Remove the module of the heat sink
- Clean the surface of the heat sink: remove the heat conducting paste (for example with methyl spirit)
- Put on a new couch of heat conducting paste on the new transistor module. Make sure that the whole side below is well covered with paste.
- Fix the module with the hexagon socket screws at the heat sink
  Attention: Measure (and replace if necessary) Z-diodes D7, D8, D9, D10 on the power print, eventually replace D7, D9 =12V, D8, D10 = 6.8V (see page 26/27)
- Fix the power print C016, C031 (see 8.2)

8.5 Rectifier

First dismount the power print C016, C031 (see 8.2)

- Remove the screws
- Remove the rectifier from the heat sink
- Clean the surface of the heat sink: remove the heat conducting paste (for example with methyl spirit)
- Put on a coach of heat conducting paste on the new transistor module. Make sure that the whole side below is well covered with paste.

- Fix the rectifier with the screws at the heat sink
  Attention: Measure (and replace if necessary) Z-diodes D7, D8, D9, D10 on the power print, eventually replace D7, D9 =12V, D8, D10 = 6.8V (see page 26/27)
- Fix the power print C016, C031

8.6 Fan

- Remove cable from binding posts K7/K8
- Remove the fan with 4 screws on the bottom of the unit
- Remove the fan
- Put in the new fan with 2mm-distance bolts
- Fix the fan with 4 screws

8.7 Temperature sensor heat sink

The sensor is installed in the cable lug that is fixed at the transistor module. Replace simply that whole part (cable lug with sensor, cable and connector)

- Remove first the power print C016, C031 (see 8.2)
- Remove the hexagon socket screws at the transistor module
- Remove that whole part (cable lug with sensor, cable and connector)
- Fix the cable lug with the hexagon socket screws on the transistor module
- Fix the power print C016, C031 (see 8.2)

8.8 Temperature sensor coil

- Place ST7 on logic print
- Remove coil from coil carrier plate
- Replace sensor. **Attention: the sensor must be placed on the vitrocerame, when the unit is connected.**
- Fix coil on the coil carrier plate. Distance lower border of coil to carrier plate must be 23mm.
- Place ST7 on logic

8.9 Repair of spare parts

Repair of spare parts and of whole units may only be effected by INDUCS Ltd. Therefore you have only to check and replace parts that are described in this service manual.

If you should repair parts, please describe exactly the faults if possible with information about the history of the unit, for example new installation, changements which have been done next to the induction cooker or to other units which are supplied by the same network.

In order to save transport charges, do not return defective parts as temperature sensors, rectifier, transistor modules, interrupters. Such parts can be disposed correctly on place.

9 Appendix

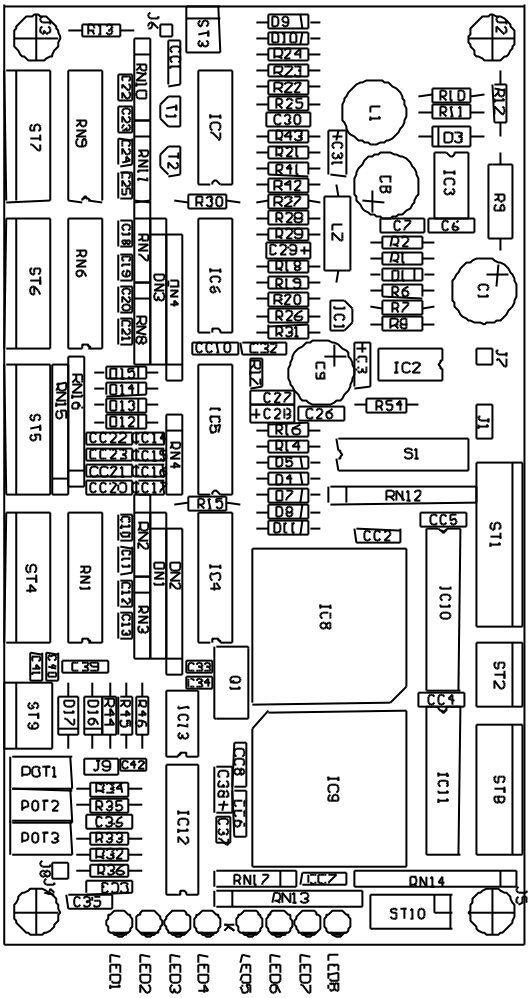
9.1 C018 Logic print

St7 Coil Temperature Sensor

St6 Temperatur Heatsink

St5 Overcurrent Detection

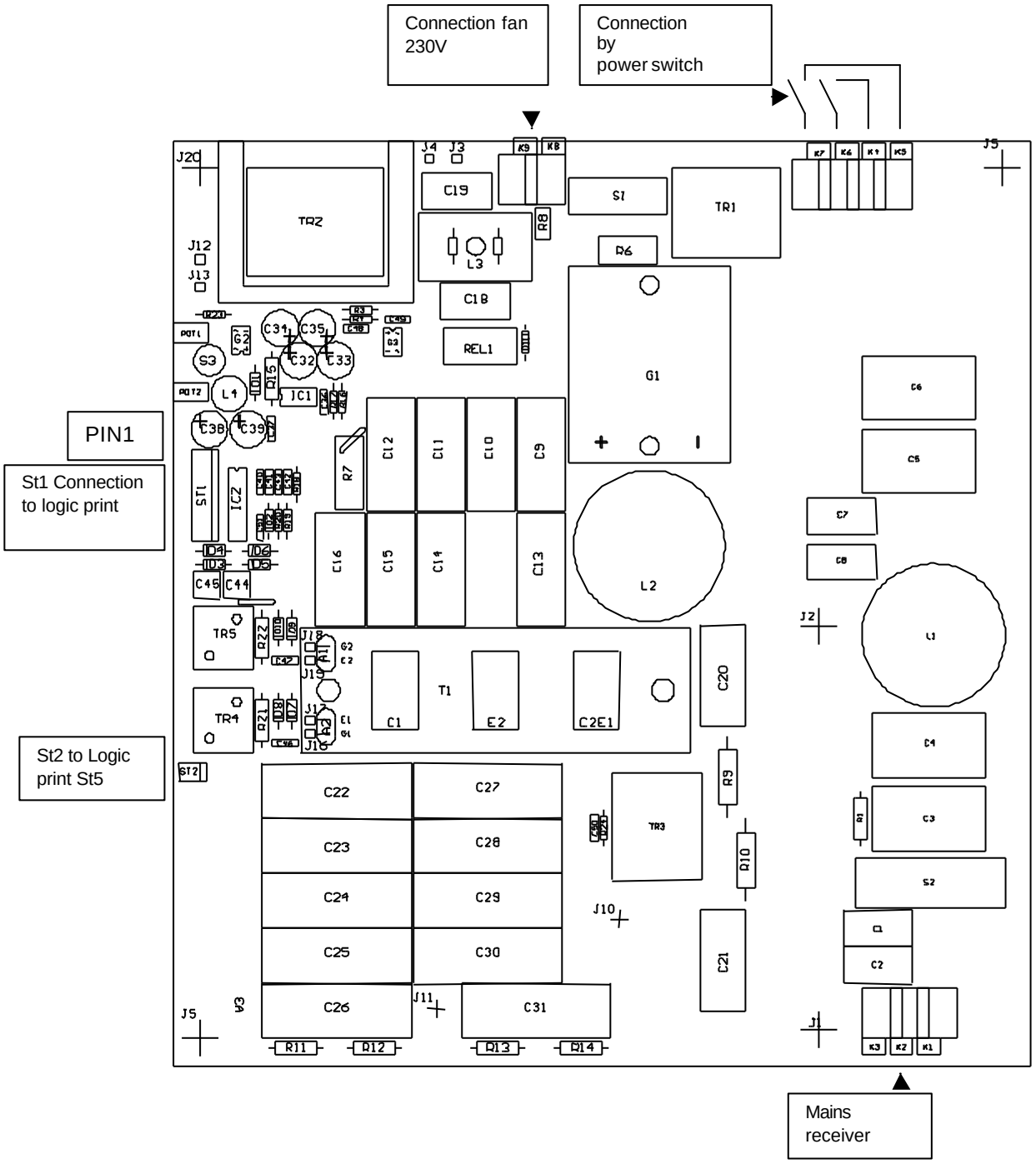
St4 Potentiometer



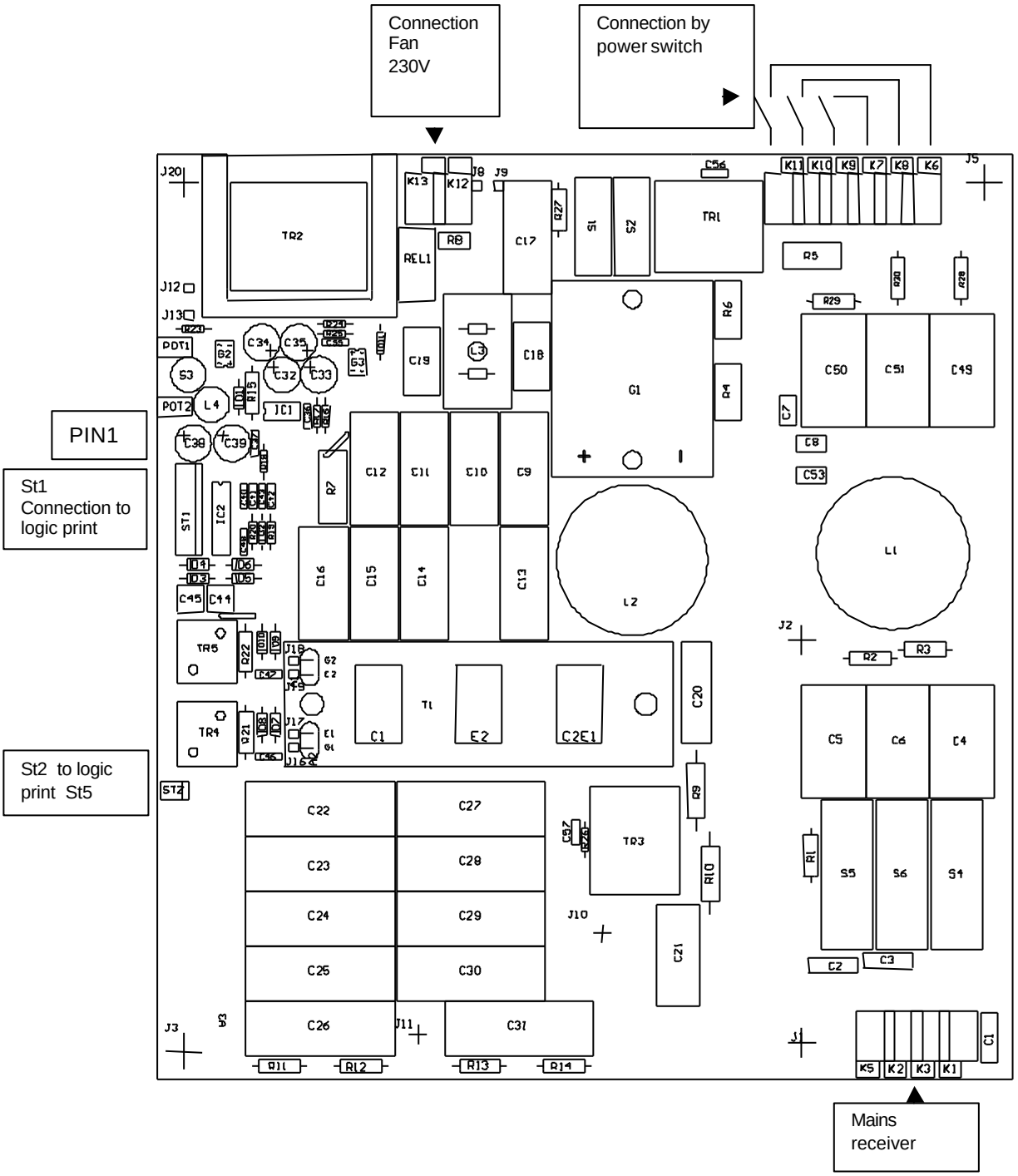
St1 Connection to power print

St8 External indicator

9.2 C031 Power print 230V, 3,5 kW

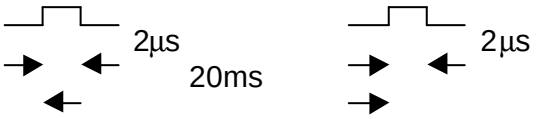


9.3 C016 Power print 400 V, 5kW



9.4 Signal connector ST1

ST1 on power board C016 and ST1 ond Logic print C018 are directly connected (connector 1 at connector 1, connector 2 at connector 2). Therefore the signs are identical.

Connec-tion	Sign	Short description
1	+24 VDC	Supply +24V for Logic print
2	enable	Verify transistor module…..... 
3	low	Verify transistor module: Logic sign (High speed CMOS), frequency env. 20 kHz
4	GND	GND Logic
5	High0	Verify transistor module : Logic sign (High speed CMOS), frequency env. 20kHz
6	High1	Not connected
7	High2	Not connected
8	High3	Not connected
9	iph	Sign, proportional to phase current, range –5V to +5V